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Chapter 2. FACILITIES AND EQUIPMENT PROGRAM

SECTION 1. *GENERAL*

200. PURPOSE
In support of the FPO flight procedures program, this chapter provides flight procedures FPO F&E specialists with a consistent planning, coordination, and implementation process for all Facilities and Equipment (F&E) programs and projects that are the responsibility of the FPOs.

201. BACKGROUND
The Federal Aviation Act of 1958, legislates the FAA responsibility for establishing and maintaining a safe and efficient National Airspace System (NAS). In compliance with this mandate, the FAA establishes policy and publishes directives /guidance to provide for the establishment of federal terminal navigation aids or the takeover of privately owned aids. The FAA budgets, purchases, installs, owns, and operates facilities and equipment based on congressional appropriations using funds from the Airport and Airway Trust Fund. Prior to this directive, there were no existing national directives providing detailed guidance for AVN to execute their portion of the F&E program at the regional level. Within each region, the AVN-100 Division's Flight Procedures Office (FPO) is assigned the responsibility for planning, prioritizing, and evaluating activities governing the location of terminal air navigation equipment (except terminal radar) and visual landing aids. This chapter will provide standardized guidance for the regional AVN portion of the F&E program and emphasize the cooperative F&E planning required in a complex NAS environment to improve the AVN F&E product.

202. THE BUDGET PROCESS
The Congressionally mandated FAA budget process is an ongoing, complex mechanism. Work may begin on a given annual budget as early as 4 years before the beginning of the fiscal year (October 1) and can continue after the end of the fiscal year. Consequently, responsible offices may be planning, beginning, correcting, spending, or closing out as many as five or more different budgets.

203. THE F&E BUDGET
In each FAA region, the National Airspace System (NAS) Implementation Center (ANI) is responsible for compiling the F&E budget. Besides ANI, other regional divisions/offices, especially Airway Facilities, Air Traffic, and AVN have direct input to the budget. The regional F & E budget submissions are sent each year to FAA HQ's for review and approval and eventual inclusion in the Presidential Budget for submission to Congress.

NOTE: The document specifying the annual F&E project items is Order 2500.55, Call for Estimates Facilities and Equipment (F&E). This order is referred to as the "Call for Estimates", the "National Call", or just the "Call" and is explained in detail in section 3 of this chapter. A specific fiscal year's published Call may be issued after

the regional submissions are due in Washington. An earlier DRAFT Call for Estimates is made available the prior August or September to enable the regions to complete their F&E submissions on a timely basis.

204-219. RESERVED

Section 2.THE FPO F&E RESPONSIBILITIES

221. GENERAL
Order 1100.5C, FAA Organization - Field, Chapter 18, describes the AVN mission and functions. Included in these mission statements is the requirement to determine regional needs for new visual landing aids and terminal air navigation aids (except radar), including justification, priorities, and place names for all items to be included in the region's F&E annual budget submission. Each region's Flight Procedures Office (FPO) is responsible for this task. This section discusses the regional FPO F&E responsibilities and the methods, documents, and job aids the FPO F&E specialist can use to manage the FPO portion of this program.

LIBRARY OF REFERENCES. Guidance, data, and a record keeping system are required in order to have an effective FPO F&E program. The following subparagraphs contain lists of recommended references needed to manage this program. Most of the documents are subscriptions or are available through normal regional distribution channels, but the office of primary responsibility is included if case copies cannot be obtained normally.

Besides this handbook, the following are major orders and data documents used to complete a benefit/cost ratio as well as determine eligible runways and airports for terminal aids.

a. The National Plan of Integrated Airport Systems (NPIAS)
Section 504a of the Airport and Airway Improvement Act of 1982 (Public Law 97-248) required the Secretary of Transportation to publish a national plan for the development of public-use airports in the United States. This FAA plan is limited to those airports that are potentially eligible for federal funding. The NPIAS is available through regional distribution or the regional Airports Division.

b. Aviation Data and Analysis System (ADA)
The ADA computer program provides access to official FAA activity reported during each FY and the approved benefit/cost methodology for airports reported by the system. The program was developed by Office of Aviation Policy, Plans, and Management Analysis (APO). Access to the program, maintained in Washington, D.C., can be obtained from APO. An IBM compatible, personal computer program has been developed for use. The program may be obtained from APO-130, Information Systems Branch. The program requires about 10 to 40 megabytes of hard disk space, depending on the number of regions contained in the data base requested, and runs

under Microsoft Disk Operating System (MS-DOS). This program is not yet available on the internet.

c. FAA or Federal Air Traffic Activity
This FAA publication used to be issued annually (for the past fiscal year) and contained terminal and en route air traffic activity information of the National Airspace System (NAS). This document is now available on the internet at www.apo.data.faa.gov Questions concerning this web site can be addressed to the Planning Analysis Division, APO-100.

d. DOT-FA75WAI-547, Ceiling-Visibility Climatological Study and Systems Enhancement Factors
This report, published June 1975, gives ceiling/visibility data for major airports based on hourly reports for 5 to 15 years. The percentage of time for VFR, IFR, VOR, and ILS weather conditions are shown by hour groups and by months. This report is available from the National Technical Information Service, Springfield, Virginia 22151. Advice in using this report in benefit/cost analysis is provided by the Office of Aviation Policy, Plans, and Management Analysis (APO). This program is not yet available on the Internet.

e. Airport Information
The FPO F&E specialist must be aware of the existing facilities on the region's airports to be able to recommend additional facilities. Also, other information like runway width and length, existing instrument approaches, weather reporting facilities, etc., are important for the F&E evaluation. The following are some of the information sources used by the FPO.

f. Order 5010.4, Airport Safety Data Program and FAA Form 5010-1, FAA Airport Master Record
The order establishes requirements for the collection, maintenance, and dissemination of airport data. The FAA Form 5010-1 lists all the facilities and equipment installed at a specific airport as well as much additional information. The order is issued by AAS, Airport Safety Data Branch, and completion of the form is the responsibility of the Airport District Offices (ADO), or in some cases, within the Airports Division in the regions.

g. Airport/Facility Directory (A/FD)
These books are published by the U.S. Department of Commerce, National Ocean Service (NOS). They contain communications data, navigational facilities, and list special notices and procedures of all airports, seaplane bases and heliports open to the public. The data source is FAA's National Flight Data Center (NFDC). These books are available through subscription.

h. U.S. Terminal Procedures Publication (TPP
These books are also published by the NOS and contain the instrument approach procedures authorized for use by the public.

A pictorial airport/heliport sketch with runway and lighting information is handy for visualizing current facilities. The data source is also NFDC. These books are available through subscription.

i. National Flight Data Digest (NFDD)
The NFDD, is issued by NFDC as a means of rapidly disseminating information on changes to the NAS including navaids, Flight Service Stations, Airports, etc.

222. TRACKING CANDIDATE LOCATIONS
In the past, many FPOs maintained records of potential airport/runway locations for future navaid/visaid nominations in the upcoming F & E budget submissions. However, due to the major reductions in recent annual F & E budgets, there is no assurance that detailed records are maintained by the FPOs.

a. Formal Datatabases
Instead of maintaining formal databases of candidate locations, a simple list of locations which have been deferred in previous F & E submissions, and lists from regional ATA offices or state aviation officials may provide adequate numbers for future nominations. Candidate airports would be ones with a high level of activity, high numbers of actual instrument approaches (AIA), or numerous scheduled annual passenger originations. Public IFR airports may be tracked, but a more reasonable suggestion is to track those airports having an average of 200 AIAs for the past 3 years. Even this list would contain airports not normally considered for F&E funding. Public visual flight rules (VFR) airports with activity amounts that produce 200 or more predicted instrument approaches (using model in FAA-APO-83-10) are possible candidates. APS-1 contains other considerations that may produce candidates such as remote locations, reliever airports, and airports with unique community economic status.

b. Updating Data Records
Accumulation of information is not nearly as hard as keeping records updated. The FPO F&E specialist is responsible for maintaining the accuracy and currency of the airport data.

223. FILES AND RECORDS
This handbook will not dictate exactly how regional files and records must be set up by the FPO. But, an F&E budget filing system should be maintained and this handbook does recommend specific tracking of information. The filing system may be kept at the F&E specialist’s desk or may be a FPO file. The following are files and records that, through experience, are recommended systems that aid the specialist in accomplishing the FPO’s F&E responsibilities.

a. Airport Record Files (Airport Data Forms)
These may be kept in a single binder, state binders, or individual folders. Copies of the instrument approach procedures (SIAP’s) can be added as a quick visual reference of existing procedures and for determining future needs.

b. Previous Calls
Some prior fiscal year's Call for Estimates should be retained, especially the preceding year. These will be used for beginning analysis of a fiscal year's budget submissions.

c. Previous Submissions
The past 3 FY F&E budget submissions must be known to begin a new fiscal year's submission list. Also, the worksheets and supporting information should be retained for 3 years and can be utilized for the new budget.

d. Facility Lists
In many cases, a complete list of eligible candidates for a specific facility (REIL or PAPI, for instance) may be used for future submissions or shared with Airways Facilities for possible reprogramming actions.

224. MAINTAINING F&E RECORDS
The F&E budgeting process is ongoing throughout the calendar year. The F&E specialist should have appropriate reference material and maintain an up to date filing system for planned submissions, to calculate current benefit/cost ratios, to track the fiscal year submissions already forwarded, and be aware of procedures and policy changes.

a. "To Do" File or "Next Year's Budget" File
Throughout the calendar year the F&E specialist will receive queries or requests for facilities to be installed at various locations within the region. Attendance at Airport Joint Planning Conferences and other gatherings will also reveal possible requirements for needed facilities. The FPO or F&E specialist should maintain a file for these requests. This file could be as simple as jotting down the locations, items requested, source of the request, and any information providing justification. The file may be 1 folder or as complex as having many folders for different F&E projects or using airport data files with F&E notations. Whatever type of filing system that serves the need of the individual FPO is the one that should be maintained. Copies of written requests and responses committing the FAA to considering a candidate must be included. This file or set of files can then be reviewed at the start of the next budget cycle in order to consider all items and locations for which a request or need has been identified.

b. Tracking F&E Projects
The regions submit the F&E budget to the FAA Headquarters by the end of January of each year. However, recent announcements from FAA HQs indicate that the deadlines for the Call may be accelerated to provide HQs more time to prioritize the F & E items into the budget cycle process. The FAA, OST, and OMB must all pass on the items submitted before they are presented to Congress for funding. Items can be expected to drop out at each of the above offices or new items may be inserted. Finally,

Congress will determine which of the remaining budget items will be funded. Feedback will be received regarding the status of budget items at each step of the process. This will normally be in the form of spreadsheets indicating which items have been approved and which have been deferred or dropped out at each level of review. Although various offices in FAA Headquarters may forward feed back data to the region, the primary FPO sources are the ANI Regional Associate Program Managers (RAPMs). A Regional Tracking Program, utilized by each regional NAS Implementation Center, is used to track F & E projects once approved by the region and forwarded to HQs. As part of this program, there are 6 cycles in the budget process from submission in the Call for Estimates through the President's signature of the F & E budget, and the RTP maintains results of these 6 cycles. The F&E specialist can obtain status reports from their regional associate RAPMs.

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Section 3.CALL FOR ESTIMATES AND APS-1

230. GENERAL

The two major documents used by the specialist for F&E submissions are: Order 2500.55, Call for Estimates Facilities and Equipment (F&E), and Order 7031.2, Airway Planning Standard Number One - Terminal Air Navigation Facilities and Air Traffic Control Services. This section discusses these documents and provides guidance to the specialist concerning what portions of the orders apply to the FPOs.

a. THE CALL-ORDER 2500.55

Order 2500.55 is the basic guidance for implementing the annual submission of the facilities and equipment requests of the regions. This order is published annually to cover a specified fiscal year (FY) of funding authorization. The Call Order is issued by the Capital Budget Division, ABU-300. The order provides program guidance and instructions for the development and preparation of a single specific fiscal year budget estimate for the F&E (Airport and Airway Trust Fund) appropriation by Congress. The prior fiscal year Order 2500.55 is canceled annually by publication of the current order. The current Order 2500.55 revises the program guidance dollar amounts and instructions for the development and preparation of budget estimates for the specified fiscal year F&E appropriation. F&E submissions for the specified budget FY shall be based on the Call, Airway Planning Standard Number One (APS-1/Order 7031.2), statistical data, and FAA policies currently in effect.

b. Appendix 1, Objectives and Formulation of Programs

This is a 16-page appendix, which lays out the “ground rules” for the submissions and contains background information.

c. Development of Program Estimates

This first paragraph explains the process of developing program estimates. The process consists of the three following phases:

1.Planning

Planning is conducted through the Aviation Capital Investment Plan (CIP) mission need process.

2.Programming

Programming is matching dollars available against the most critical needs and priorities established in the planning process (in the CIP).

3.Budgeting

Budgeting involves the refinement of detailed costs and conversion of program structured data into budget structured data. The result is an actual budget submission.

d. Submission Requirements
The regions (along with the headquarters offices, services, and centers) are required to submit detailed narrative justifications, cost estimates and project material lists for each candidate location submitted in response to individual program items within the Call for Estimates. An explanation of congressionally mandated changes to the FAA's F&E program is included.

e. Relationship of CIP to Budget Process
The relationship of the CIP and the F&E budget is explained as well as recent changes to the CIP process. Mission need statements were required to "revalidate" existing CIP programs and System for any new programs. New CIP programs must compete against all other existing CIP programs for funding.

f. Due Dates
The Regions are required to submit their consolidated F&E budget input under a cover letter from the Regional Administrator to the Office of Budget, ABU-1 (Attn: ABU-310) Regional budgets are also submitted electronically on the Resource Tracking Program.

231. APPLICABLE AVN PORTIONS OF THE CALL
Although the entire Call has FPO applicable portions, Appendix 2, National Program/Criteria Items, is the section requiring extensive FPO input for the regional F&E submissions. These items change from year-to-year. Therefore, the Call must be the referenced annually to identify changes that are applicable to the FPOs.

a. Items the FPOs are Responsible for Submitting
Appendix 2 of the Call, budget activity group 2D, Landing and Navigational Aids Programs, contains items which may require FPO input and submission of prioritized candidates and their justification. The other activity groups are not normally the FPO's responsibility (items under 2D include terminal navaids [other than radar] and visual landing aids.) The FPO F&E specialist must screen the items within group 2D and determine which are their responsibilities, determine items which regional offices might have greater vested interest, and determine which items are definitely the responsibility of others.

b. Defer Notification
Once specialists make the determination as to which items in area 2D they do not intend to submit as candidates, they should notify their counterpart representatives within their NAS Interdivisional Working Group (IDWG)

c. Examples Which Are Deferred
The Call may determine that certain items should be excluded for a particular FY. Programs like the VOR/DME/TACAN Net work Plan, dated August 1986, identified facilities to be relocated, converted, upgraded, combined, established, replaced, or deleted to meet the requirements of the National Airspace System (NAS.) This program has been terminated.

232. APS-1 AND THE BENEFIT/COST PROCESS

The FAA Administrator is empowered to provide air navigation facilities and air traffic control services to ensure efficient utilization of the navigable airspace (including that required for takeoff and landing) and the safe and expeditious f low of air traffic. To discharge this responsibility, the FAA provides terminal facilities and services at airports to assist aircraft in starting and terminating their flights. The policy and criteria used in establishing the eligibility of terminal locations for terminal air navigation facilities are contained in Order 7031.2, Airway Planning Standard Number One -Terminal Air Navigation Facilities and Air Traffic Control Services (APS-1).

a. Philosophy

The safety and efficiency of air traffic operational requirements determine the need for air navigational facilities and air traffic control services, but these facilities and services should only be established at locations where the benefits of service exceed the cost to the government. Economic consideration of benefits and costs for both new establishments and improvements to existing facilities or service are related to air traffic activity levels and other parameters such as capacity, etc. Since the FAA operates within defined budgetary limitations, the facilities and services must be allocated to locations where the greatest benefit will be derived from their cost. Therefore, APS-1 specifies minimum activity levels for airports to become candidates for, to qualify for, or to retain primary terminal air navigation facilities and air traffic control services. Generally, the total present value of the benefits over the life cycle of an improvement or service must exceed the total present value of the life cycle costs for establishment and maintenance of the facility or service.

b. Disclaimer

Satisfying criteria specified in APS-1 DOES NOT CONSTITUTE A COMMITMENT by the FAA to provide, modify, or discontinue eligible facilities or services. Eligible candidates are evaluated and prioritized based on known aircraft traffic conditions, national capacity requirements, numbers and funding in each Call, and regional priorities. Also, inclusion into the CIP as part of a national program is generally required and a lengthy review process occurs. Ultimately, the U.S. Congress acts to approve and fund those facilities and services which survive a fiscal year’s F&E budget process.

c. Evaluation Phases

There may be two phases to some F & E analysis, such as for Category II/III ILSs. Phase I is accomplished in the region using the APS-1 criteria and any special parameters included in the Call. For certain types of facilities, APS-1 also establishes requirements for a final benefit/cost analysis (Phase II). In this case, Phase I is a qualifications ratio. Phase II calculations are applied at FAA Headquarters, normally using more

than the data supplied by the region and required by the Call. Phase II evaluation normally involves a site specific, complex formula established by a report from the Office of Aviation Policy, Plans, Management Analysis (APO). The reports may be specified in APS-1. Any facilities and equipment submitted by the regions that do not meet these Phase II requirements are deleted from the budget submission by FAA Headquarters.

d. Responsibility

The FAA shall determine the eligibility of candidates and their qualification for submission for F&E funding consideration by the U.S. Congress. For terminal navaids and visual aids, this responsibility falls upon the F&E specialist within the FPO. The following APS-1 guidance pertains specifically to the FPO's responsibilities for the F&E budget process.

1.Establishing Candidacy

An airport/runway that meets the criteria specified in APS-1 for one or more air navigation facilities becomes a candidate location for the particular facilities.

2.Establishing Qualification

A candidate facility or service becomes qualified for establishment when:

(1) It meets the criteria specified in APS-1 for three consecutive FAA annual counts (An FAA annual count is a fiscal year or a calendar year activity summary. Where actual traffic counts are unavailable or not recorded, adequately documented estimates of the demand for the facility or service may be used; for example, an Air Traffic Control Tower or consultant study), and/or

(2) It meets the criteria specified in APS-1, Chapter 1, paragraph 7, reference to remote locations, new airports, or the "new communities" program, or the exceptions as specified in APS-1, paragraph 8, (also see paragraph d below), and

(3) It is recommended by a Regional Administrator as necessary to satisfy an operational requirement and is economically justified by a benefit/cost study, and

(4) The recommendation of the Regional Administrator is concurred with by the FAA Administrator.

3.Discontinuance of Facilities or Services

Whenever the activity level of an air navigation facility falls to or below the discontinuance criteria specified within APS-1, or if factors other than activity level were used to justify establishment and

these cease to exist or change significantly, the facility or service is a candidate for decommissioning. If the activity level remains at or goes below the discontinuance level for three consecutive FAA annual counts, the facility or service shall be discontinued unless its retention can be specifically justified. However, political realities often prevent this action.

e. APS-1 Criteria and Variations Within the Criteria

APS-1 contains screening criteria for the establishment of the various terminal facilities and air traffic control services. Criteria for other than terminal air navigation facilities and air traffic control services are contained in the appropriate airway planning standard or agency directive.

(1) The criteria contained in APS-1 are primarily based on air traffic demand (count) since volume of traffic is a tangible and measurable indication of the need for air navigation facilities and air traffic control services. However, these criteria do not cover all situations which may arise and shall not be used as a sole determination in denying a location a terminal facility or service for which there s a demonstrated operational requirement or air traffic control requirement. Similarly, air traffic demand does not by itself always constitute a requirement for an air navigation facility or air traffic control service.

(2) A true aeronautical requirement may exist for facilities and/or services that cannot be measured with reference to the volume of air traffic activity alone. There are other factors (wherein a fixed count requirement cannot be established) which must also be considered. These include the general terrain features in the vicinity of the airport, the nature of the operation, the frequent and predictable occurrence of severe climatological phenomena such as heavy fog, snow or ice, or other local conditions that can adversely affect aircraft operations or the safety of the flying public.

233. APPLICABLE AVN PORTIONS OF APS-1

The following subparagraphs of APS-1 are applicable for reviews and calculations by the AVN F&E specialist.

a. Chapter 2. Navigation Aids, Section 1

Provides benefit/cost establishment criteria and discontinuance criteria for MLS/ILS, RVRs, and includes LDAs, TVORs, and DMEs with Localizers/marker beacons, although these systems have not been included in recent budget submissions.

b. Chapter 3. Criteria for VASIs (PAPIs), REILs, and retrofit of ALS systems

The following items, have been not been included in recent budget submissions, but may be included in the future.

(1) Microwave Landing System (MLS) with approach lights
(2) Supplemental criteria for MLS/ILS establishment at commercial service airports
(3) Supplemental MLS/ILS Criteria for Reliever Airports
(4) Non-precision Localizer and 75 MHZ Marker Beacon.
(5) Terminal Very High Frequency Omni Range (TVOR)
(6) Distance Measuring Equipment (DME) with Localizer/Marker Beacon.
(7) PAPIs, for straight-in non-precision approach procedures.
(8) MALSR or ODALS
(8) RVRs for non-precision runway
(9) Category I ILS
(10) NDBs
(11) VOR Test Signal (VOT)

c. Chapter 4 Air Traffic Control; Automated Weather Observing System (AWOS)

This is the only subject item in this chapter for which the AVN F&E specialist has partial responsibility. Establishment and discontinuance Phase 1 benefit/cost criteria are provided for in par. 46.c, AWOS at airports with no control tower. Air Traffic has responsibility for federal tower and non-federal tower locations.

d. Appendix 2. Summary of Establishment and Discontinuance Criteria

(1) Figure 1 – Criteria Summary for Chapter 2, Navigation Aids Section 1. - Air Navigation Radio Aids. By individual subject facilities, this figure summarizes establishment and discontinuance criteria for each subject item.

(2) Figure 2 - Summary of Establishment and Discontinuance Criteria for Chapter 3. Aeronautical Lighting and Airport Marking Aids. By individual subject facilities, this figure summarizes establishment and discontinuance criteria for each item.

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Section 4. APS-1 APPLICATION AND CALCULATIONS

240. GENERAL

This section will step through the procedures for applying the criteria in APS-1 and the Call in order to establish eligibility for candidates for the F&E submissions. Other orders and documents are included that contain supporting criteria. Call examples and samples are included. Because APS-1 calculations are simple mathematics, they are easily programmable and most FPOs have usable programs already established.

241. EXPLANATION OF CALL ITEMS

Call items are not hard to read and understand. Two examples from a recent Call are included in this handbook for the purpose of showing what Section 3 described. These are examples only. Future Calls will contain changes and different requirements. Numbering conventions for Call items may also change. The first example contains a detailed explanation of a Call item. The second example shows the complex ILS Call item.

a. RVR Call Item Example

In Appendix 2 of the Call, under Budget Activity 2, Air Traffic Control Facilities and Equipment, and under 2D, Landing and Navigational Aids Program, is 2DO7, Runway Visual Range (RVR). (See Figure 2-1)

This system is listed under project number 3408 of the Capital Investment Plan (CIP). The programmed total dollar amount is 3 million for various locations. The full coding is the Call numbers, followed by the title, and ending with the code numbers. The program sponsors are both AVN and the Program Director for Navigation and Landing (ANN). A headquarters organizational contact list is included at the end of the item.

b. ILS Call Item (See Figure 2-2)

This item is of prime importance to the FPO F&E specialist. An ILS requires extensive work to apply criteria, determine eligibility and qualification, and justify the submission with a written staff study.

(1) Note that the eligibility criteria are extensive but well presented. Some of the criteria are explicit while some allows flexibility.

(2) Category II/III systems require special criteria. These will also require a phase II benefit/cost analysis by headquarters. Documentation with the staff study is required for the airport authority agreements and to assure carriers can provide Category II/III approved crews and equipment.

(3) The additional facilities and equipment for ILS systems are listed under separate code numbers.

c. The Precision Approach Landing System Policy
The Precision Approach Landing System Policy dated December 27, 1989, permits the establishment of ILS on a basis of the following eligibility criteria:

(1) Meet MLS establishment criteria contained in “Airway Planning Standard Number One” (APS-1), Order 7031.2C, and must have a current benefit/cost ratio of 1.0 or greater.

(2) Meet a documented critical safety requirement.

(3) Have an immediate and critical requirement for precision approach that cannot be delayed until WAAS/LAAS becomes available; e.g., storm damage systems, immediate capacity needs, new runways, etc.

(4) Be documented by a complete staff study.

(5) Have their operational need validated by the Communication and Navigation Division, ARN-200.

d. Project Requirements
Include the total project requirements within this budget item (e.g., CAT III ILS with ALSF II, engine generator, or CAT I ILS with MALSR, DME, Wide Aperture Antenna). Do not budget for these items/sub-items elsewhere within your response to the Call. We must have a clear definition of the project including all necessary equipment, benefit/cost ratio, project material lists (PML), etc. Do not buy Sub-line item equipment in your PML. Identify the requirement by responding to each budget sub-line item.
“Staff Study Guide,” “ILS Data Worksheet,” “ILS Checklist”, “Budget Item Summary,” and FAA Forms 2500-40 (regional cost) and 4650-1 (PML) are required.
Program Manager’s office: AND-740, 202 493-4559
Project Engineer’s office: AND-740, 202 493-4762/4768
e. ILS CATEGORY II/III ESTABLISHMENT/UPGRADE CRITERIA
The following requirements must be met for a Category II/III establishment or upgrade of an existing ILS.

(1) The candidate runway must meet all appropriate FAA technical standards and requirements.

(2) The airport authority must agree to install and maintain the required facilities and equipment (i.e., centerline lights, touchdown zone lights, etc.). Documentation to this effect must be provided with the staff study.

(3) The air carrier(s), which will utilize the Category II/III facilities, must be able to provide Category II/III approved crews and equipment. Written assurance of this requirement must accompany the staff study. This documentation should be requested through the regional FSDO which has certificate responsibility for the carrier.

(4) The Airport must have reached 2500 air carrier annual instrument approaches (AIAs) for the past three fiscal years.

(5) Category II/III systems to be procured under F&E for runways meeting conditions a through d must be validated by a benefit/cost analysis by the Office of Aviation Policy and Plans, APO-100.

(6) Requests by sponsors for FAA assumption of ownership, operations, and maintenance of Category II/III systems, acquired under Part 171, must meet specific requirements.

The format on the following pages should be used in preparing the individual staff studies for candidate locations.

NOTE: The Call then has a Staff Study Guide, a 2 page ILS Data Worksheet, and Instructions For ILS Data Worksheet. These will be discussed in Section 5, F&E Submissions. Also, an ILS Project Checklist is included in the Call, which is completed by ANI.

e. Submission Requirements
Examples of the "Budget Item Summary" and the FAA Form 2500-40 "F&E Cost Estimate Summary" (regional cost), that were mentioned in the Call items samples, are included in the Call, Appendix 4. The Form 4650-1 is the "Project Material List" (PML). These are accomplished by ANI.

Figure 2.1. SAMPLE RVR CALL ITEM

2DO7: NP Runway Visual Range (RVR) – Establish
CIP No: 34-08
Amount: $3,000,000
Coding: 3471-0-119
Locations: Various
Sponsor: AVN/ANN

This item establishes a touchdown zone RVR measuring system on Category I ILS runways at towered airports. This item also establishes RVR systems on non-precision runways for takeoff or capacity enhancement in accordance with Airway Planning Standard Number One (APS -1) criteria, Order 7031.2C. This system will provide a standardized, instantaneous, and accurate method of measuring actual meteorological visibility of an ILS equipped runway. Significant changes in runway visibility will be immediately discernible and can be given to the pilot of an aircraft prior to reaching a condition that could be potentially hazardous for completion of the approach and landing.

This item is only for Category I ILS with approach lights and high intensity runway lights (HIRL's) because RVR systems are integral components of Category II and III systems. Candidate locations shall be determined in accordance with APS No. 1,

paragraph 21c(l). Any towered airport with less than 15 annual hourly observations of visibility of one-half of a mile or less will not qualify for an RVR system regardless of the RVR installation index value.

A non-precision instrument runway (i.e., not equipped with an Instrument Landing System/MLS) qualifies as a candidate for establishment of an RVR provided:

(1) the airport has at least one RVR-equipped precision instrumented runway;
(2) the provisions of Order 6560.10B, Runway Visual Range, and the siting and installation standards of FAA-STD-008 can be met; and
(3) the ratio of life-cycle benefits to life cycle cost equals or exceeds 1.0

In order to achieve reduction of takeoff visibility minima authorized under provisions of Order 6560.10B, Air Carrier runways are eligible as candidates for RVR funding even in the absence of a precision or non-precision instrument approach procedure to that runway. High intensity runway edge lighting (HIRL), runway centerline lighting, and a means of reporting current RVR readings must be available or committed to be available prior to the RVR installation. Achievement of this RVR capability will reduce takeoff minima from ½ statute mile to as low as RVR 600 feet visibility for both ends of that runway. This is a significant operational benefit and capacity enhancement. Regions will use APS-1 RVR for a non-precision instrument runway for a ratio of life-cycle benefits to life cycle costs and shall equal or exceed a ratio of 1.0. Regions will submit their calculations in accordance with the methodology contained in APS-1, paragraph 21c(l), for each location.

“Budget Item Summary” and FAA Forms 2500-40 (regional cost) and 4650-1 (PML) are required. Regions are requested to prioritize their locations.

Program Manager’s office: AND-740, (202) 493-4748

Figure 2.2. SAMPLE ILS CALL ITEM

2DO4B NP ILS - CAT II – Establish
CIP No: 34-06
Amount: TBD
Coding: 3131-0-138
Locations: Various
Sponsor: AVN

2DO4C NP ILS - CAT III - Establish
CIP No: 34-06
Amount: TBD
Coding: 3131-0-139
Locations: Various
Sponsor: AVN

2DO4E NP RVR - Establish for CAT II/III ILS
CIP No: 34-06
Amount: TBD
Coding: 3471-0-138
Locations: Various
Sponsor: AVN/ANN

2DO4G NP DME - Establish for CAT II/III ILS
CIP No: 34-06
Amount: TBD
Coding: 3124-0-138
Locations: Various
Sponsor: AVN/ANN

242. SPECIFIC EXPLANATION OF APS-1 CRITERIA
The APS-1 ILS job aid at the end of this section is listed in the order established in APS-1. Although the Call items above are fairly explicit, the APS-1 criteria are more complicated to read through and apply. APS-1 and the Call must be used concurrently when beginning the F&E analysis process because the requirements and criteria in both compliment each other. In some cases, the APS-1 criteria are very specific and rigid; in other cases, judgment determinations can be made if sufficiently justified through detailed documentation. The purpose of this section is to discuss the criteria, but not to quantify all options or set uncompromising standards that were not included or intended. But, where additional guidance is needed and not presently available, this section includes that guidance. Each airport situation is unique with special problems that must be considered. Using good judgment and the criteria guidelines, the FPO F&E specialist can substantiate, in writing, the candidate facility installation sites that will enhance the NAS and produce a safer environment for the flying public.

243. ILS, APS-1 PARAGRAPH 20, AND HANDBOOK FIGURE 2-3
APS-1 lists the requirements for establishing an ILS and the Call specifies that to establish an ILS, APS-1 MLS criteria apply. There is no separate ILS establishment guidance in APS-1.

a. Establishment
To be a candidate for Category I ILS with an approach light system, a runway must have scheduled turbojet operations conducted on a sustained basis and expected to continue uninterrupted), or a runway or heliport must meet the annual instrument approach criteria. Also, a comprehensive runway or heliport evaluation is required to determine if applicable FAA airport design and operational standards are met and that the operations to be conducted will be safe. Airport sponsor protection of the electronic facility's critical areas must be technically feasible and practical. A minimum runway length of 4200 feet and width of 75 feet are required to obtain the lowest minima. (See AC 150/5300-13, App. 16, Table A16-1) Runway or heliport lights are also required.

b. Annual Instrument Approach (AIA) Criteria
APS-1, paragraph 20b, has a table from which is obtained the "qualifying AIA's" for insertion in the calculation formula. To use this table, determine if the airport is an air carrier hub or non-hub because different calculation numbers apply (Hub information is located in the current FAA or Federal Air Traffic Activity.) Also, determine the lowest non-precision approach minimums currently authorized for the largest aircraft to the candidate runway end in order to enter the proper column of the minimums table in APS-1. The table is designed so that the higher the existing non-precision minimums, the lower the required "qualifying AIA's". The table is also designed to achieve precision minimums of 200-1/2. If achievable minimums

will be higher, the Office of Aviation Policy, Plans, and Management Analysis (APO) will be consulted to determine the applicable criteria. APS-1 also gives information on determining the percentage of IFR runway use for insertion in the formula. A resulting benefit/cost ratio of 1.0 or greater qualifies the candidate.

c. Benefit/Cost Screening

Screening of the candidate ILS will be accomplished in Washington for all candidates. APS-1 and the Call lists additional justification and expected benefits that may be used in the staff study. The Call requires the staff study to be submitted for each candidate Category II/III location.

d. Additional Guidance

The following are situations where ILS guidance is not available or explicit.

1.Applying Airport and Safety Standards

APS-1 implies that all applicable runway safety standards have to be met before a runway can be a candidate; this is not always true. A candidate can be submitted before a runway is extended or before a runway is even built. Because of the long lead time required for F&E budgeting, regional planning and coordination must be accomplished for construction and upgrading. Required facilities should be submitted in the FY budget based on the planned construction schedule. The intent of the criteria are to demand safety; the intent is not to restrict candidacy until all construction is complete. This explanation is substantiated in the Call, which specifically states, “new runways”.

2.Determining Current Minimums and Table Reference

For ceilings, use the minimums on the approach chart for entering the table. When the ceiling is 700 feet, use the 800-1 column. High visibilities are very restrictive for aircraft utilizing an approach. When the ceiling is 300 feet but the visibility is 1 mile, use the 400-1 column. For visibilities in excess of 1 mile, use the least qualifying AIAs regardless of the ceiling (800-1 column).

3.New Runways or Runways without Approaches

The APS-1 table requires existing minimums to enter the table. With no approaches, minimums are not available. Use the HIGHEST circling minimums (for largest aircraft expected to use the runway) required at that airport. Because of TERPS Table 11, rarely will this circling visibility not exceed 1 mile. Consequently, the 800-1 column is normally used. The 800-1 column should also be used when circling is not published at that airport.

4.New Airports
Again, there are no published minimums. Use VFR minimums of 1000- 3, which equates to the highest minimums in the table: 800-1. AIA counts will not be available and must be estimated.

5.Cat II/III
APS-1 has no criteria for Cat II/III ILS or WAAS GPS. However, APO-200 is able to provide some independent estimates of B/C ratios for such systems on the basis of guidance contained in Establishment and Discontinuance Criteria for Precision Landing Systems, FAA-APO-83-10. In addition, the Call example has some criteria. Normally, Cat II/III systems are well planned and well thought-out installations. The Airport Master Plan (AMP) will show when these systems are planned, when the airport authority plans to begin installation of required taxiway and lighting systems, etc. (usually with AIP assistance.) The regional operational divisions will have discussed and studied all factors of the installation and agreed to dates, and the carriers have made plans for the systems and may have made major economic decisions based on the installation. Rarely will a Cat II/III request from a zealous airport authority or air carrier occur and be a surprise to the F&E specialist. The problems come from the F&E process itself, where the system must be submitted years in advance of the target dates, and all of the problems associated with the installation may not have been solved. The burdens that fall on the F&E specialist are to determine the need for the Cat II/III system, determine if the runway/airport will meet Cat II special obstacle clearance surface requirements, determine whether it will qualify, and justify the F&E submission by a staff study. In the absence of formal guidance, the following criteria can be used.

NOTE: Although this subparagraph will discuss some Call criteria contained in the previous samples, these criteria change with the issuance of the current annual FY Call.

e. Criteria change with the issuance of the current annual FY Call

1.Determining Need
The purpose of Cat II/III systems is to allow air carrier operations during low weather conditions (less than 200-1/2). Consequently, low conditions and air carrier AIAs are the major factors for determining need. To even qualify for a Cat I RVR system, the Call example requires 15 or more annual hourly observations where visibilities are ½ mile or less. For a Cat II/III system, this annual observation count should be

much higher than the 15. The ILS Call example requires 2500 annual air carrier AIAs to the airport for each of the past 3 years. (The 2500 AIA requirement was established in FAA-ASP-76-1, Establishment Criteria for Category II Instrument Landing System (ILS), completed by APO.) The 2500 air carrier AIAs and 15 annual hourly observations shall be the absolute minimum for determining need.

2.Determining Qualification
The primary qualification factor is that the runway meets current ILS Cat I criteria. This means it meets APS-1 Phase I ratio of 1.0 or higher or other special criteria specified in APS-1 or the Call. Most Cat II/III systems are upgrades from a Cat I system and will meet this criteria. Where a runway is newly constructed and an original Cat II/III system will be installed, this evaluation will have to be made. Assure Cat II special obstruction clearance areas can and will be protected, and that airport design criteria, are met. The airport must have a control tower. The candidate runway must meet all appropriate FAA technical standards and requirements. The airport authority must agree to install and maintain the required signs, lighting, and marking. The air carrier(s) must be able to provide approved crews and equipment as specified in AC 120-28, Criteria for Approval of Category III Landing Weather Minima. If CAT III is to be established, the airport must be capable of establishing a low visibility Surface Movement Guidance and Control System plan in accordance with AC 120-57.

3.Justification
Justification for a Cat II/III submission is contained in the staff study. Use the staff guide discussed in the next section of this handbook. Include all information and documentation required in the Call and discussed in this Cat II/III subparagraph.

244. SUPPLEMENTAL CRITERIA FOR MLS/ILS ESTABLISHMENT AT COMMERCIAL SERVICE AIRPORTS, APS-1 PARAGRAPH 20d

Commercial service airports are defined as public airports, which are determined by the FAA to enplane annually 2,500 or more passengers, and receive scheduled passenger service by aircraft. This definition is from the Airport and Airway Improvement Act of 1982. The procedure is relatively simple. Complete an ILS benefit/cost ratio (B/CR) on the candidate runway. If the B/CR is less than 1.0 and the following conditions exist, the supplemental criteria can apply. If this airport has connecting scheduled passenger service to an associated hub airport which is expected to continue; if the total scheduled/non-scheduled annual enplaned passengers are not expected to fall below 2,500; and if the airport does not have a precision landing system and is not programmed for one. The next step is to complete a

B/CR on the PRIMARY runway of the associated hub airport. The two combined B/CRs divided by 2 is the combined ratio. This combined ratio must be 1.0 or greater to qualify for candidacy. The staff study should thoroughly explain the thought processes for the commercial airport submission and specify that the above criteria have been met.

245. SUPPLEMENTAL ILS CRITERIA FOR RELIEVER AIRPORTS, APS-1 PARAGRAPH 20e

Although not included as a job aid, APS-1 addresses reliever airport criteria. The value of reduced congestion and improved safety at the relieved major airport can be considered an additional benefit to determine if benefit exceeds the cost. Although no numbers (specific criteria formula) are stated, the supporting documentation required is a thorough staff study based upon quantitative and qualitative analyses. These analyses should include the number of operations, AIA's, and/or landings at the primary airport and the congestion reduction estimates the new system at the reliever airport could provide. Additional information that may be appropriate like air traffic control planning, training precision approach numbers, noise problems, military training flights, etc. should also be included.

246. RVR WITH ILS APS-1 PARAGRAPH 20h

APS-1 lists the criteria for establishing an RVR with these precision systems. The RVR Call example expands upon the requirements and is only for touchdown RVRs associated with Category I systems. Note that establishing midpoint and rollout RVR with Category II/III systems are under the Establish Instrument Landing System (ILS) Call item. Category II/III systems have special facilities and equipment requirements which include RVR. The F&E specialist must be familiar with these requirements. Also, the RVR Call item for Category I systems states that approach lights and HIRL's are required. Specialists must be aware that TERPS Chapter 3 levies additional requirements. To chart RVR approach and takeoff minimums, HIRL and precision runway markings (or touchdown zone and centerline lighting) are required. To obtain the lower approach minimums authorized with RVR in TERPS Table 9, full approach lights (with RAILs) are required. For RVR approach minimums of 1800 feet, a full approach lighting system and touchdown zone and centerline lights are required.

a. Establishment

A Category-I precision instrument runway qualifies as a candidate for establishment of a Touchdown RVR System provided: an acceptable method is available for immediate dissemination of RVR value data to pilots; the provisions of Order 6560.10, Runway Visual Range, and the siting and installation standards of FAA-STD-008 can be met; and finally, the Phase I value B/CR equals or exceeds 1.0. The Call example for RVR requires an Air Traffic Control Tower (ATCT), which is the standard method for immediate dissemination of RVR values to the pilot.

b. Benefit/Cost Parameters

The benefit/cost calculations use both air carrier and air taxi AIAs and operations. The system design factor (SDF) is a variable based upon whether this is the first RVR system at the airport or

not. APS-1 also gives a third factor for a system that is not "new generation". Because of the RVR equipment policy explained in the Call, this system design factor was not included as a job aid. APS-1 gives a default runway use-IFR table if a site specific value is unavailable or cannot be estimated.

c. Benefit/Cost Screening
Headquarters will screen all candidates for RVR. APS-1 does state special consideration may be given for unique, site specific operational factors like troublesome terrain, significant remoteness of the runway from the tower, etc. In these cases, a narrative and explanatory reference should be included with the RVR submission.

247. DME WITH LOCALIZER, APS-1 PARAGRAPH 22a(3
The requirements are more complicated for determining the qualifying AIA's to insert in the formula because they come from the large, 2 page APS-1 Table 22a(3). The table's variables are the hub size for air carriers, air taxi, combined general aviation and military, the current minimums of the largest user aircraft, and the projected LOC/DME minimums for the largest user aircraft. These have been included on the job aid for easy reference. The only other qualifier is no glide slope.

248. VASI/PAPI WITH NONPRECISION APPROACH PROCEDURE, APS-1 PARAGRAPH 22a(4
In this paragraph of APS-1, only VASI criteria are included. The PAPI Call item for straight-in non-precision approaches states that the APS-1 VASI criteria shall apply until PAPI criteria can be developed. This is the first time that landings are qualifiers rather than AIA's, AEP's, or operations. Since landing data are not always available, operations divided by 2 can be used. Note that the landings and AIA's are for that runway only. Either actual runway utilization or the table following APS-1 paragraph 31c(4) can be used.

249. MALS OR ODALS WITH NONPRECISION APPROACH PROCEDURE, APS-1 PARAGRAPH 22a(5), AND HANDBOOK FIGURE 2-10
Although APS-1 specifically states MALS rather than MALSR, local conditions and safety concerns as well as future operational plans for that runway should be considered when evaluating whether MALS or MALSR would be appropriate. The same criteria apply to both types of approach light systems.

a. Criteria
Approach light system qualifiers are a specified number of airport AIA's or AEP's. Additionally, a non-precision approach must exist or be planned and the system must reduce landing visibility minimums. ODALS rather than MALS may be installed under certain conditions. (Recently, MALS and ODALS systems for non-precision approach runways have not been a Call item.)

b. Possible Conflicts in Criteria
Anyone that has applied TERPS criteria knows that to receive visibility reduction credit for approach lights, a straight-in

procedure is required. Yet, APS-1 requires landing visibility minimums reduction for MALS and ODALS, but then allows ODALS in lieu of MALS when the procedure does not permit a straight-in approach. This can be interpreted as conflicting criteria. For guidance, the F&E specialist must consider the safety aspects of the approach and actual or planned final approach alignment before determining the need for ODALS. If the need is substantiated for procedures not permitting straight-in, the visibility minimums reduction requirement does not apply, but the safety aspects of installing ODALS rather than omni-directional REILs must be considered. These factors are also true for FAA takeover of ODALS.

c. Other TERPS Considerations

When considering submissions for approach lighting systems, specific paragraphs in TERPS Chapter 3 referring to visibility reductions must be understood. For example, TERPS paragraph 332 requires a clear 20:1 slope for visibilities below 1 mile and a clear 34:1 slope for visibilities below ¾ mile. Also, TERPS paragraph 343 requires proper runway markings and the final approach course must place the aircraft within the operational coverage of the lights

250. RVR FOR NONPRECISION INSTRUMENTED RUNWAY, APS-1 PARA 22a(6)

APS-1 states that to be a candidate for RVR: the runway must be non-precision instrumented (not equipped with ILS); the airport has one or more RVR equipped precision instrumented runways (and all Category I runways must already be RVR equipped and satisfy criteria for RVR at Category I runways) ; the provisions of Order 6560.10 and siting and installation standards of FAA-STD-008 can be met; and the benefit/cost methodology outlined in FAA-APO-88-14 is 1.0 or greater. Report FAA APO-88-14, dated November, 1988, contains very complex benefit/cost criteria. The criteria were applied to a list of 106 prospective candidate airports (most major airports) and 43 qualified with a B/C ratio of 1.0 or more. The report also lists more than 300 non-prospective candidate airports (no B/C ratio completed) and lists the reasons for noncandidacy.

251. REIL, APS-1 PARAGRAPH 30

REIL installation may be funded under either F&E or AIP. Close coordination with Airports is necessary when submitting for REILs. The Call usually includes both establishing REIL and converting to omni-directional REILs. The qualifiers are: landings; the runway is not currently equipped with or programmed for an approach light system; the runway has approved edge lights for night operations; and a runway end identification problem exists. Runway end identification problems are detailed in Order 8260.18. Exceptional safety requirements may dictate establishing a REIL when not meeting these qualifications. This determination will be made in Washington based upon the region’s written recommendation and justification. The actual runway utilization percentage or the table on page 36 is the final formula requirement to determine the runway ratio value.

252. VASI/PAPI (VFR ONLY), APS-1 PARAGRAPH 31
VASI/PAPI installations may be funded under AIP or F&E. Close coordination with Airports is necessary when submitting for VASI/PAPI. Order 8260.18 discusses requirements for visual approach aids and should to be part of F&E evaluations for PAPI candidate runways. The Call usually provides for PAPIs on non-precision approach runways (see paragraph 250) and for other runways. Caution must be taken to use the correct criteria when making submissions under these Call items. The Call just states, without paragraph reference, that APS-1 criteria apply until PAPI criteria can be developed. APS-1 requires that an electronic glide slope not be installed or programmed to qualify for some VASIs. The latest Call states that priority consideration will be given to air carrier runways not equipped with vertical guidance devices and lists different priorities. APS-1 requires that every candidate runway submission include: number of airport operations; number of runways; whether an ILS is installed or programmed for the runway; number and type of VASI's already installed or programmed for other runways; and runway utilization percentage. The criteria used in the formula are based on landings, and both non-ILS or ILS qualifying landing numbers are available. APS-1 paragraph 3le states that locations can be nominated to satisfy a special safety requirement, but a specific staff study must be submitted at the time of nomination.

253. CRITERIA FOR OTHER SYSTEMS
APS-1 contains other criteria for systems the F&E specialist may occasionally need to use, for instance, VOT. These criteria may be referred to when needed.

254-259 RESERVED

FIGURE 2-3. APS-1 – ILS (MLS)

ESTABLISH CATEGORY I ILS (WITH MALSR)

(APS-1, Paragraph 20, Pages 11-14)

Date: _____

General Data

Airport Name: _____ Ident: _____ Runway Number:_____
Data Source:(T) TAF:__ (F)FAA 5010:___(0)Other: ___ Date(Year)of Data: _____
Air Carrier AIAs:__Air Taxi AIAs:__Gen. Aviation AIAs:___Military AIAs:_____
Runway Length (in Feet)_____ (at least 4,200 feet required for 200 & ½)
Runway Width (in Feet) _____ (at least 75 feet required for 200 & ½)
Is this a HUB? ____ (Yes)____ (No)____ Enter Percent of Runway Use-IFR: _____
Lowest Ceiling Published for Largest Aircraft: _____
Lowest Visibility Published for Largest Aircraft: _____

Benefit/Cost Calculations (Paragraph 20b)

Air Carrier (Recorded AIAs) / (Qualifying AIAs) _____ =

+

Air Taxi (Recorded AIAs) / (Qualifying AIAs) _____ =

+

Gen. Aviation (Recorded AIAs) / (Qualifying AIAs) _____ =

+

Military (Recorded AIAs) / (Qualifying AIAs) _____ = _____ Total

Percent of Runway Use-IFR _____ (Total) X _____ Total Ratio = _____

QUALIFIED - 1.0 or Greater Total Ratio
*UNQUALIFIED - Less than 1.0 Total Ratio.
*(See Supplemental Criteria - Commercial Service Airports/Reliever Airports, paragraph 20d/e.)

Section 5. F&E SUBMISSIONS

260. GENERAL

This section will detail the thought processes for determining candidates for yearly F&E submissions and provide guidance for actual submissions; examples are included. Although the intent of this handbook is to standardize FPO operations, regions may have different established procedures and directives for the F&E process and for submission requirements. This section should be used to supplement local procedures and to standardize operations where no guidance is provided.

261. CANDIDATE DECISIONS

During normal day-to-day operations throughout the calendar year, the F&E specialist will become aware of numerous possible candidates for terminal navaids and lighting systems. Unsolicited proposals will be randomly received from various sources by letters, telephone calls, and meetings. In some cases, an APS-1 B/CR may already have been required. A good FPO record-keeping system is recommended.

a. Old Candidates

A key input for candidate lists is feedback received on prior FY F&E submissions. The specialist should review and evaluate these candidates based on which were validated and funded, which were deferred, and which were non-validated. This evaluation is normally the first step in the FPO F&E candidate identification process.

b. New Candidate Input

Besides using a day-to-day record keeping system, new candidate input should be solicited by one regional directive/letter or operational division’s letter. Most regions use one of these methods. Input is particularly important from FAA field offices and organizations outside the agency such as state aviation directors and the Air Transport Association of America (ATA).

c. Candidate Solicitations

Timely candidate solicitation is important so the F&E specialist has sufficient time to perform required analysis, identify qualified candidates, complete required justifications, establish priorities, format, and finalize the submission.

d. Solicitation Timelines

The solicitations should be sent no later than the end of May or as directed in regional F&E guidance. A May date will normally allow sufficient time for the responses to be sent to the region and for the F&E specialist to complete the analysis and submission.

e. Candidate Priority

Regional priorities are important because the higher the priority attached to the candidate location, the better the chance exists for the candidate to survive the review process and to achieve funding approval by Congress. For the submitted lists, the F&E

specialist normally establishes the priority of qualified candidates, but in some cases, priorities may be dictated by the Call.

(1) The list priorities may be arranged in descending numerical values based on the individual candidate's B/CRs. Some Call items may require this priority.

(2) Some Call items specify a priority based on specific criteria with designations of la, 1b, etc. Submissions shall specify these priorities.

(3) When the F&E specialist is aware of other overriding concerns, the numerical priorities within some listings may be adjusted to reflect urgencies and practical realities. Situations leading to priority adjustments other than by B/CR could include critical operational or safety needs, known regional objectives, urgent time frames, aviation user group interest, etc.

(4) The F&E specialist may wish to consult individuals within the branch or other offices before finalizing the priority lists. Unknown factors may surface that may change the list.

(5) The final lists will be reviewed by the appropriate regional committees and approved by the Regional Administrator.

f. Candidate Quantity
Determining the number of candidates to submit for each Call item can be a difficult task. If the list of qualifying candidates is very long, hard decisions have to be made to select how many should be included and how many to submit in later fiscal years. Typically, less money is available than is desired, but occasionally, some regions have few or no candidates for certain Call items.

(1) Submitting the region's fair share of a Call item is the most commonly used method of determining submission numbers.

(a) Each of the Call items has a dollar amount and, in some cases, the number of locations. Although these numbers are not always what Congress eventually appropriates, they are the indicators as to the number of locations that each region should submit.

(b) Each region has a percentage of the total aviation activity and public use airports. With this percentage, the F&E specialist can determine the fair share for the region. If this percentage is not known, the percentage of the dollar amount from the regional originated within-ceiling projects, in appendix 3 of the Call, can be used.

(c) If location numbers are included in the Call, the regional percentage of that number is the region's fair

share. If location numbers are not included, the regional percentage of the dollar amount is the region's fair share. Airway Facilities personnel can provide average installation costs for that Call item to equate dollars to location numbers.

(d) The F&E specialist should submit the region's fair share plus a reasonable additional number. The reasons for the additional number are many. Some candidates will be "dropped out" anyway and having too many is not a detriment. Some regions may not submit their fair share allowing the additional locations to be funded. Also, safety or congressional interests may produce over estimate funding. Even though this is a rare occurrence, candidate locations will be available in Washington to quickly add to a budget.

(e) An excessive number of candidates should not be submitted. Unreasonably excessive lists create an enormous workload for ANI for site studies, cost estimates, and equipment lists. An added workload is also placed on headquarters review personnel if the region submits an excessive list.

(f) Rather than using the fair share method of determining submission numbers, past appropriations may be used. If the region is typically funded for two systems, the system list should be not more than three or four. However, Call wording and region or headquarters submission policies may require an extensive list which should not be decreased.

(2) The above guidance cannot account for every situation. The most important consideration for submission numbers is NEED. If the region needs five ILSs that fiscal year and one ILS is the region's fair share, then submit for the five ILSs, rather than one fair share and one extra. Not all candidates may pass headquarters' review process, but F&E specialists determine and submit the location numbers needed. Conversely, if no ILSs are really needed that fiscal year, do not submit for that budget item. This action will increase the possibly of funding for regions having a greater need.

262. SUBMISSION REQUIREMENTS IN THE CALL AND APS-1

The National Call for Estimates and APS-1 may require specific documentation to be included in the regional submission. This paragraph contains an explanation of these requirements and examples for which the F&E specialist is responsible.

a. Reason for Special Documentation

After the region submits an FY F&E budget, an extensive review process is necessary before actual appropriation. Many individuals scrutinize the lists. When determining which candidates to forward to higher levels of review, more information is needed besides regional priorities and B/CRs. Information such as proposed runway construction, unique safety

issues, figures in the B/CR calculation, capacity issues, and proposed traffic increases are important points when considering which candidates should be forwarded and which should be “dropped out”. Also, in some cases, the APS-1 calculation methodology is required to complete the review or phase II study in Washington.

b. When to Complete Additional Documentation
The best time to complete these special requirements is at the time the B/CR is completed and the decision is made to possibly include that facility in the AVN submission. At that time, all the data and specifics are known about the airport or runway. Waiting until the total submission is put together can lead to pertinent information not being included in the justification or an added review of all data would be required. Even if the facility does not make the regional list, the additional documentation can serve as a reminder for upcoming fiscal years and small changes can bring the information up to date.

c. ILS Staff Study and Data Sheet
The Call currently requires a staff study and data sheet to be completed for all Category II/III ILS candidates. Figures 2-4, 2-5, and 2-6 contain the ILS Staff Study Guide, Instructions for the ILS Data Worksheet, and the ILS Data Worksheet. Figures 2-7, 2-8, and 2-9 are completed examples of a B/CR, staff study, and data worksheet. When the B/CR is completed, much of the information is needed for the staff study and worksheet. This is why all should be completed at the same time. Note that the sample staff study has more information than the minimum required in the staff study guide. A concerted effort should be made to include all pertinent information in the staff study. Part of the study should include results of a coordinated ILS study, including input from Airway Facilities, Air Traffic, and Airports.

d. Other Staff Study Requirements
Throughout the Call, and especially in APS-1, references are made to “justification” or “additional justification” that is required when the Call or APS-1 criteria were not met or submissions were made under appendix 3 of the Call for regional within-ceiling and over ceiling projects. These justifications for FPO submissions shall be in a staff study format.

(1) The simple staff study format of three headings (problem, solution, and remarks, if required) is normally sufficient for these justifications.

(2) Two additional sample staff studies are included as examples. See Figures 2-10 and 2-11.

263. ASSOCIATED PROBLEMS AND CONSIDERATIONS FOR SUBMISSIONS
This chapter has described the processes and procedures for evaluating sites to be included in FPO F&E budget submissions. Guidance is provided so that the specialist understands the F&E process, knows how to use the appropriate directives, and can accurately and confidently

submit a list of needed facilities. This process is work intensive and has been simplified as much as possible. However, there exist problems and considerations that the specialist must understand which may complicate the oversimplified processes previously described.

a. The Draft Call

The items and dollar amounts included in the draft Call portray the programs and policies of the FAA at the time the draft was being completed. The draft Call supports the FAA's CIP. The dollar amounts are only "best guess" because the draft is put together nearly 3 years before Congress will legislate this budget. During the long lead-time, programs and policies may change.

(1) The FAA is part of the executive branch of government and many of the FAA's programs and policies may change based on the emphasis and direction of governmental policy makers. The economy and overall budget considerations affect these decisions. The President, OMB, DOT, and even the FAA may determine if changes in direction or spending are required. Consequently, the budget submitted to Congress may be considerably different from the contents of the draft Call.

(2) Congress, as the legislative branch of government, legislates and appropriates the F&E budget. Again, based on the law passed by Congress, changes to programs and policies may occur. Congress may delete a specific program or even legislate facilities to be installed at specific named sites.

(3) The F&E specialist may become frustrated to see deserving candidates not being funded. Candidate airport A may not even be forwarded to DOT for consideration, while airport B may be funded for a facility when it was not even submitted. Specialists must be aware that decisions are made that are beyond their control and that programs and policies can change or be changed as a given FY budget progresses through the budget process. The draft Call is only the original guide. The specialist should not be discouraged and deserving candidates must be tracked and resubmitted, if not approved initially.

b. Phase II Evaluations

Many of the facility candidates require a Phase II evaluation. These are required by APS-1 or the Call and are accomplished in Washington.

(1) The simplified criteria contained in APS-1 are Phase I criteria. Its purpose is to provide minimum qualification standards for a given facility and site. A full benefit/cost comparison is a much more complicated process.

(2) The Phase II evaluations take into consideration many more variables than just traffic or passenger count. Based on the specific facility type, these computer programs may evaluate

actual dollar amounts for installation and maintenance over the expected life of the facility. Type of terrain may be considered. Actual weather conditions, frequency of bad weather, etc. may be evaluated. Actual air traffic conditions, count, and frequency of congestion (in relation to weather) may be considered. The F & E specialist supplies the traffic count data used in the staff study. Forecast data may be from the ADA database. Extremely complex mathematical formulas are used to complete the Phase II evaluations and they portray a more complete benefit over cost relationship.

(3) The F&E specialist should be aware that the Phase II evaluations do not disqualify a candidate that meets Phase I criteria. However, Phase II numerical ratios may result in a candidate not being forwarded to the next review level.

c. Feedback

A critical element for the F&E specialist is tracking the previously submitted candidates. Feedback on the progress of a specific fiscal year's budget, especially in relation to the submitted candidates, is the only way the specialist will know that sites have dropped out. The specialist may want to resubmit these sites.

(1) The specialist must realize that if a site was sent to Congress and not funded, an immediate effort is needed to re-insert that site location (if desired) in the budget that is still at the region. If this can not be accomplished, funding may be delayed yet another year while the budget in the region is already programmed for over 2 years in the future.

(2) Sometimes, budget feedback is received in the region, especially at ANI, before similar information is available from AVN. A good working relationship with F&E counterparts in the regional operational divisions is essential for timely exchange of budget information.

d. Data

Airport operations and AIA counts are proportionally the critical data for determining candidacy for facilities. The specialist must be aware that this data is mostly from air traffic controllers logging these operations as they happen or later from the progress strips. The controller's main responsibility is controlling air traffic and these required counts are only an additional duty. For AIA counts, the weather conditions at the time of the approach apply, as stated in the AIA definition in Order 7210.3. Taking all these factors into consideration, the specialist will understand why the data may not be absolutely accurate.

e. Form 5010 Data

Operations for airports without air traffic control towers are normally taken from the Form 5010s for that airport. Data from

the Form 5010s are normally contracted to the state aviation organization with reimbursement from the FAA. The states regularly update Form 5010 data every 2 years by surveys and site inspections. Obviously, the traffic counts are not as accurate as those taken by air traffic controllers.

(1) Even though the data may not be accurate, it is official FAA data and can be used for applying APS-1 criteria. This data is part of the ADA system.

(2) The specialist does have some data accuracy options. Report FAA-APO-83-10, listed as a recommended library reference, contains a model to estimate AIAs from total operations counts. Also, working with Air Traffic and Airports, the specialist may be able to acquire more accurate data. APO issued Report FAA-APO-85-7, Statistical Sampling of Aircraft Operations at Non-Towered Airports, which contains procedures for obtaining more accurate counts.

f. Submissions for TVORs or VORs
Whether terminal or en route, were a part of an FAA VOR/DME/TACAN Network Plan. This particular program has been completed and is no longer active.

264. THE SUBMISSION
Each FPO is responsible for preparing a detailed submission for each FY F&E Call for Estimates. The submission is accomplished by the FPO in accordance with guidance provided in the annual Call order, specific regional orders, and other regional requirements. A computer file is often required and submitted. Computerized formatting allows for easy altering of candidate lists, easy combining of all lists for the final regional budget including all supporting documentation, and rapid printout of the budget or individual portions.

a. Submission Copy Requirements
The computer file, or printed package with floppy disk, may be submitted to ANI Division and copies may be forwarded to Air Traffic Division and Airports Division for information. The FPO F&E specialist should retain a copy of submissions for working reference.

b. Justifications and Special Submission Requirements
Include all additional staff studies, B/CRs, etc. that are required.

c. Other
Some Call items require specific information that must be listed, for example, PAPI. A table of contents or index may be included. For easy reference, the file names on the computer disk could be part of the table of contents.

d. Submission Deadlines
Typically, the FPO F&E submission should be at ANI not later than October 1. Meeting this target date will enable AF to run site

specific cost estimates and to finalize the F&E budget for interdivisional review in December, Regional Administrator briefing early in January, and printing and forwarding the budget to Washington by January 30. Draft individual facility lists may be sent to the ANI F&E Section before the October I date by mutual agreement and with the understanding that the formal submissions will be forthcoming.

265 -269. RESERVED

FIGURE 2-4. ILS STAFF STUDY GUIDE

EXECUTIVE SUMMARY - (if warranted by complexity of the study and associated issues).
INTRODUCTION
This staff study was completed by _____ in support of a request for a Category I ILS at _____ in compliance with the "FAA MLS Transition Policy." This study examines the proposed ILS to be purchased under (list option contained in MLS transition policy).
2. FACTS
The City of _____ has completed extensive construction on _____ Airport, which included the extension of runway _____, which now requires precision instrument capability. Additionally, the FAA has received numerous letters from users indicating a need for this approach. The airport authority agrees with this requirement and has designed the runway as a precision instrument runway. A preliminary study indicates no known environmental considerations. (Provide additional supporting information as warranted to permit in depth analysis of the proposal. Consider at least the following factors and provide quantifiable data where appropriate:
1. Safety
2. Airport and NAS capacity enhancement
3. Regional priority
4. Regional workload
5. User priority
6. Total traffic and instrument approach count
7. Benefit/cost ration
8. Passenger enplanements)

3. ANALYSIS
The _____ Region has completed a "Phase I" benefit/cost for runway _____ at _____ Airport using APS No. 1 with a resulting total ratio of _____. The airport had enplanements in FY _____ and there has been scheduled turbojet operations for _____ years.
(Sentence/paragraph on each of the applicable "factors" listed in the policy statement.)

4. LIST OPTIONS (as applicable)
Consider that ILSs installed under this policy will be operated and maintained for a minimum of 10 years from the date of commissioning. Why must this site receive ILS versus MLS?
5. CONCLUSIONS
The _____ Region has determined that there is a critical aeronautical need to provide a precision instrument approach (ILS) at _____ Airport, runway, with MALSR. This will fulfill an FAA objective to provide increased (safety, capacity, traffic flow, user capability, etc.) within _____ the metropolitan area.

Page 2- FIGURE 2-5. INSTRUCTIONS FOR ILS DATA WORKSHEET

ILS Worksheet

Item 1, 2, and 3: Self-explanatory.
Item 4: Use identifier listed in Order 7350.5.
Item 5: Self-explanatory.
Item 6: Use existing length and width, if less than 4,200 (per APS No. 1) justify installation.
Item 7 & 8: As designated in the “National Plan of Integrated Airport Systems” (NPIAS).
Item 9: Use minima for the largest category of aircraft utilizing the runway in question.
Item 10: As indicated in Order 7031.2, paragraph 20B.
Item 11: Indicate the number of ILSs currently installed. (Include in number any ILS that have been approved for installation but have not been installed.)
Item 12: Best estimate of lowest minima obtainable. than 200-1/2, explain in staff study.
Item 13, 14, and 15: Self explanatory.
Item 16: Indicate up to three air carrier operators by designated letter identifier.
Item 17: Category II/III submittal only.
Item 18: Indicate total AIAs for the airport by category of user as indicated.
Item 19, 20, and 21: Self-explanatory.
Item 22: Compute total ratio in accordance with Order 7031.2, paragraph 20b, or for a Category II/III system upgrade use air carrier AIAs divided by 2500 equals total ratio.
Item 23: Category II/III submittal only.
Item 24: Copy of letter from airport authority (Airport Manager) that states: 1. A desire for Category II/III; 2. Understands requirement for center line and touchdown zone lights, etc.
Item 25: For Category II/III only; show columns 5 and 6 cumulative data (“all”) from “Ceiling-Visibility Climatological Study and System Enhancement Factors,” DOT-FA75WAI-547.
Item 26 & 27: Self-explanatory.

FIGURE 2-6. ILS DATA WORKSHEET

ILS DATA WORKSHEET

Proposal for ILS, part 171 _____ AIP _____ F & E _____
1. CITY: _____ 2. _____
3. AIRPORT NAME: _____ 4. IDENTIFIER: _____
5. RUNWAY NUMBER: _____ 6. RUNWAY LENGTH AND WIDTH: _____
7. RELIEVER (YES/NO): _____ 8. HUB (YES/NO): _____
9. NON-PRECISION APPROACH MINIMA: _____
10. ESTIMATED IFR USE ON CANDIDATE RUNWAY: _____ %
11. TOTAL IL SYSTEMS: _____
12. POTENTIAL LOWEST ILS MINIMA: _____
13. CATEGORY ILS REQUESTED: CAT I _____ CAT II/III _____
14. ALS: CURRENT _____ REQUIRED _____
15. PART 135/121 SCHEDULED PASSENGER SERVICE (YES/NO): _____
16. SCHEDULED AIR CARRIER IDENTIFIERS (up to three):

ID	**TURBOJET**
1. _____	YES/NO
2. _____	YES/NO
3. _____	YES/NO

17. A PERCENT OF CATEGORY II/III EQUIPPED AIR CARRIERS USING THE AIRPORT _____ %
18. ACTUAL INSTRUMENT APPROACH DATA

	AIR CARRIER	**AIR TAXI**	**GENERAL AVIATION**	**MILITARY**
1.	FY _____			
2.	FY _____			
3.	FY _____			

19. AIA DATA SOURCE:
AIR TRAFFIC ACTIVITY/TAF: _____
SURVEY: _____
ESTIMATE: _____

20. ENPLANEMENT DATA:
TOTAL ENPLANEMENT
1. FY _____
2. FY _____
3. FY _____

21. FORECAST ENPLANEMENTS FOR YEAR OF INSTALLATION: _____
22. TOTAL RATIO: _____
23. AIR CARRIER COMMITMENT LETTER (for Category II/III only): _____
24. AIRPORT SPONSOR COMMITMENT LETTER (for Category II/III only):_____
25. WEATHER DATA FOR CATEGORY II/III QUALIFICATION:
COLUMN 5 “ALL” _____ COLUMN 6 “ALL” _____

26. SITE PREPARATION AND ANCILLARY EQUIPMENT INFORMATION:

A. WILL AIP FUNDS BE REQUIRED FOR SITE PREPARATION? YES/NO
IF SO, ESTIMATE TOTAL FEDERAL FUNDS REQUIRED _____
B. FOR CATEGORY II/III, WHAT RVR EQUIPMENT IS REQUIRED _____
ESTIMATE TOTAL FEDERAL FUNDS REQUIRED _____

27. SUMMARY OF EQUIPMENT REQUIRED _____

FIGURE 2-7. SAMPLE ILS Benefit/Cost Ratio (B/CR)

ESTABLISH CATEGORY I ILS (WITH MALSR)

(APS-1, Paragraph 20, Pages 11-14)
Date _____

General Data
Airport Name: _____Ident: _____
Runway: _____
Data Source: (T) TAF: _____ (F) FAA 5010: _____ (0) Other: _____
Date (Year) of Data: _____ Air Carrier AIAs: _____
Air Taxi AIAs: _____ Gen. Aviation AIAs: _____
Military AIAs: _____
Runway Length (in Feet) _____(at least 4,200 feet required)
Runway Width (in Feet) _____(at least 75 feet required)
Is this a HUB? _____ (Yes); _____(No)
Enter Percent of Runway Use-IFR: _____
Lowest Ceiling Published for Largest Aircraft: _____
Lowest Visibility Published for Largest Aircraft: _____

Benefit/Cost Calculations (paragraph 20b)

(Recorded AIAs)	=	
Air Carrier	(Qualifying AIAs)	
Air Taxi	(Recorded AIAs)	=
(Qualifying AIAs)		
Gen. Aviation	(Recorded AIAs)	=
(Qualifying AIAs)		
Military	(Recorded AIAs)	=
(Qualifying AIAs)	_____	
Total		

Percent of Runway Use-IFR _____ X _____ = _____
(Total) Total Ratio

QUALIFIED - 1.0 or Greater Total Ratio
*UNQUALIFIED - Less than 1.0 Total Ratio.
*(See Supplemental Criteria – Commercial Service Airports/Reliever Airports, paragraph 20d/e) Fig 2-7

FIGURE 2-8. SAMPLE COMPLETED ILS STAFF STUDY

STAFF STUDY

ILS OCEAN VIEW AIRPORT, RWY 16L
FY 02 F&E BUDGET SUBMITTAL

1. INTRODUCTION

This staff study was completed, by the Los Angeles Flight Procedures Office, in support of a request for a Category II ILS, Runway 16L, at Ocean View Airport, Fog Island, Arizona in compliance with the "FAA MLS Transition Policy."

This request meets the following eligibility criteria:

a. MLS establishment criteria contained in APS No. 1 with a current benefit/cost ratio greater than 1.0.

b. Located at a medium hub airport as defined in the "National Plan of Integrated Airport Systems".

c. Due to the nearly completed new runways (16L/34R), the forecast of increased activity indicates there is an immediate requirement to install precision approach capability and institute simultaneous ILS procedures with runway 16R. This capacity increase necessity cannot be delayed until WAAS GPS becomes available.

2. FACTS

Ocean County is completing extensive construction of Runway 16L/34R at Ocean View Airport. In addition, the passenger terminal has been modernized, new concrete ramps and 15 new gates were constructed, and the general aviation ramp area was greatly expanded. The Fixed Base Operator, G. Straight Enterprises, is also developing ocean front property and advertising nationwide for fly-in vacation sites.

Air carrier operators have agreed to increase scheduled flights and hub operations at the airport expecting dual ILS procedures to separate general aviation traffic from the air carrier traffic. The necessary Air Traffic Control Tower equipment, personnel, and training were included in the FY98 and FY99 budgets.

Fog Island has residential and commercial property available, an excellent beach, deep-sea fishing and whale watching excursions from the 4 marinas, a wilderness area, and a national wildlife refuge consisting of both semi-desert and seashore areas. As development continues, the FY98 enplanements of 34,670 are expected to increase to 50,000 in 2001. The FY98 general aviation annual instrument approaches of 122 should reach 200 in 1996. These forecasts are based on a private, county contracted study, completed in 1986 and was used to justify the extensive airport construction.

The new runway was needed to service the expected increase in air traffic for the Fog Island recreation area and now requires precision instrument capability. The airport authority agrees with this requirement and has designated the runway as a precision instrument runway.

An extensive feasibility study was completed prior to runway construction. The comprehensive evaluation considered safety, efficiency, and environmental issues such as IFR/VFR traffic patterns, noise issues, and final approach courses to other nearby airports. Based on available land, facility siting is feasible and there are no known environmental considerations.

3. ANALYSIS

The Los Angeles FPO has completed a “Phase I’, benefit/cost for runway 16L at Ocean View Airport using APS No. 1 with a resulting total ratio of 1.92. The airport had 34,670 enplanements in FY98 and there have been scheduled turbojet operations for at least 20 years.

Because of the air traffic mix of air carrier and general aviation, two runways are required to separate the different aircraft speed categories. Even in the desert environment, the close proximity to the ocean produced 50 IFR days (or partial IFR days) in 1998. To enhance capacity and safety, parallel precision runways are required and simultaneous ILS approaches are planned to effectively handle the anticipated increase of air traffic. The new runway meets or exceeds applicable FAA directives for a precision approach and simultaneous ILS approaches.

The airport management has effectively planned and coordinated the construction project to satisfy air traffic growth projections. In the many past hearings attended by the user groups, all agreed with the construction plans and stressed the priority need for dual precision runways. The Western-Pacific Region agrees with the growth projections, even with the current economic downturn.

4. WAAS GPS OPTION

Ocean View Airport is in need of a precision approach for the new runway to effectively handle the forecasted increase in air carrier and general aviation operations. Very few (if any) of the users have GPS receivers at this time. This site should receive an ILS due to delayed implementation of WAAS GPS. WAAS implementation at this airport is doubtful prior to FY 2006.

5. CONCLUSION

The Los Angeles FPO has determined that there is a critical aeronautical need to provide a precision instrument approach (ILS) at Ocean View Airport, runway 16L, with MALSR. This will fulfill an FAA objective to provide increased safety and capacity within the Fog Island metropolitan area.

FIGURE 2-9. SAMPLE COMPLETED ILS DATA WORKSKEET

ILS DATA WORKSHEET

Proposal for ILS, Part 171_____ AIP _____ F & E ___X_____

1. CITY: Fog Island_____ 2. STATE: Arizona_____
3. AIRPORT NAME: Ocean View Airport_____ 4. IDENTIFIER: KFOG__
5. RUNWAY NUMBER: 16L_ 6. RUNWAY LENGTH AND WIDTH: 8200/150__

7. RELIEVER (YES/NO): __Y____ 8. HUB (YES/NO): __N_____
9. NON-PRECISION APPROACH MINIMA: N/A (800-1)_____
10. ESTIMATED IFR USE ON CANDIDATE RUNWAY: _____70%_____
11. TOTAL ILS SYSTEMS: ____0_____
12. POTENTIAL LOWEST ILS MINIMA: 200 - ½_____
13. CATEGORY ILS REQUESTED: CAT II
14. ALS: CURRENT __MALSR_____REQUIRED _ __ALSF-2___
15. PART 135/121 SCHEDULED PASSENGER SERVICE (YES/NO): Yes_____
16. SCHEDULED AIR CARRIER IDENTIFIERS (up to three):

ID	TURBOJET
1. AA	YES
2. DL	YES
3. UA	YES

17. A PERCENT OF CATEGORY II/III EQUIPPED AIR CARRIERS USING THE AIRPORT 30 %
18. ACTUAL INSTRUMENT APPROACH DATA

	AIR CARRIER	AIR TAXI	GENERAL AVIATION	MILITARY
1. FY	89	269	208	122
	84			
2. FY	*88*	249	175	120
	93			
3. FY	*87*	256	139	105
	67			

19. AIA DATA SOURCE:

AIR TRAFFIC ACTIVITY/TAF: X_____
SURVEY: _____
ESTIMATE: _____

20. ENPLANEMENT DATA:

	TOTAL ENPLANEMENT
1. FY __89__	34,670
2. FY __88__	31,419
3. FY __87__	33,603

21. FORECAST ENPLANEMENTS FOR YEAR OF INSTALLATION: ____45,000_____
22. TOTAL RATIO: _____ 1.92_____
23. AIR CARRIER COMMITMENT LETTER (for Category II/III only): Yes_
24. AIRPORT SPONSOR COMMITMENT LETTER (for Category II/III only): __N/A__
25. WEATHER DATA FOR CATEGORY II/III QUALIFICATION: __N/A__

COLUMN 5 "ALL" _____ COLUMN 6 "ALL" _____

26. SITE PREPARATION AND ANCILLARY EQUIPMENT INFORMATION:

A. WILL AIP FUNDS BE REQUIRED FOR SITE PREPARATION? NO
IF SO, ESTIMATE TOTAL FEDERAL FUNDS REQUIRED _____
B. FOR CATEGORY II/III, WHAT RVR EQUIPMENT IS REQUIRED __TD & RO RVRs
ESTIMATE TOTAL FEDERAL FUNDS REQUIRED

27. SUMMARY OF EQUIPMENT REQUIRED: LOC, GS, LOM OR DME, ALSF-2 TOUCHDOWN & ROLLOUT RVR, Emergency generator

FIGURE 2-10. SAMPLE STAFF STUDY I

NDB Staff Study

Establish Non-directional Beacon Locator at the outer marker, RWY 02, Lovell Field, Chattanooga, Tennessee.

PROBLEM: MORRT intersection/OM for the ILS RWY 02 approach to Lovell Field, Chattanooga, Tennessee, does not have a collocated non-directional beacon locator. Instead it is a fan marker/intersection identified by the RWY 02 localizer course and the 258 degree radial of Chattanooga VORTAC. Following are problems as a result of not having a collocated NDB at MORRT OWINT:

A. Prevailing winds favor use of RWY 02 approximately 50 percent of the time. In event of ILS inoperative, no backup approach is available. Installation of NDB at MORRT would provide a backup NDB RWY 02 approach.

B. Transition from Chattanooga VOR is required to clear aircraft for the ILS RWY 02 approach. Installation of an NDB at MORRT would permit direct tracking to MORRT, saving users time and fuel.

C. Holding altitudes at MORRT are restricted to 5,000 feet. Installation of NDB at MORRT would enable increased capability of holding up to 10,000 feet.

D. Pilots must monitor a cross radial from Chattanooga VORTAC to identify passage of the final approach fix. Installation of NDB at MORRT would provide immediate identification of passage of final approach fix.

E. Existing missed approach procedure for approaches to RWY 20 is a climbing left turn to Chattanooga VORTAC. Installation of NDB at MORRT would permit a missed approach straight ahead climb to MORRT.

SOLUTION: Install an NDB (LOM) collocated at MORRT outer marker.

NOTE: Consideration should be given to making this a Region item to ensure action.

FIGURE 2-11. SAMPLE STAFF STUDY 2

DME Staff Study

Establish Distance Measuring Equipment (DME) at the localizer serving the precision ILS RWY 18R and non-precision localizer RWY 18R instrument approach procedures, Orlando International Airport, Florida.

PROBLEM: Inability to automatically provide actual distance from the runway to aircraft conducting the precision and non-precision approaches to RWY 18R at Orlando International Airport.

SOLUTION: Installation of DME equipment at the localizer antenna, RWY 18R, Orlando International Airport.

REMARKS: 1995 landing usage for RWY 18R was 40 percent. Since then a third parallel runway has been commissioned, and a fourth parallel runway is projected to be commissioned September 1999. At that time landings will be on the outboard runways with priority given to south operations due to prevailing winds and noise mitigation. Therefore, RWY 18R is projected to be utilized at least 32 percent for landings. Due to lack of a Non-directional Beacon (LOM), radar vectoring and positioning is required for the ILS RWY 28R instrument approach procedure. Installation of DME at the 18R localizer would substitute for the lack of a LOM, and would enable use of the instrument approach procedure without reliance on radar. This would benefit aircraft operations, relieve controller workload and smooth traffic flow for landings, increasing efficiency of air traffic movement at this large hub airport.

AIA Counts (AC/AT/GA/MIL)	Priority
4,426/465/687/55	la

NOTE: This is important enough to include as a region funded item, in order to assure its accomplishment.

Section 6. RELATED F&E REQUIREMENTS

270. GENERAL

There are many FPO responsibilities relating to the Facilities and Equipment program that are not part of the budget submission process covered in the previous sections of this chapter. This section will address these functions and will discuss the regional working groups. The Aviation Safety Specialist assigned to F&E duties is the focal point for the FPOs responsibilities regarding Facilities and Equipment and is expected to provide technical expertise to other operating divisions and to the public.

271. REGIONAL WORKING GROUPS

With the FAA straight line reorganization in 1988, standardized regional F&E policies and procedures were recognized as a requirement to promote effective coordination. Based on the revised organizational responsibility and budgetary role of the Regional Administrators, teamwork through inter-organizational working groups was perceived as highly critical in the F&E process. Several regions are already using a division management level Facility Review Board and a working level Interdivisional Working Group. AVN supports the ANI attempt to institutionalize these groups in all regions. Order 1110.117, Regional Facilities Review Committees and Interdivisional Working Committees, formally establishes these two committees in the regions and prescribes the responsibilities of each.

a. Interdivisional Working Committee (IDWC).

1. Membership

The IDWC consists of designated representatives of ANI, Airway Facilities, AVN, Air Traffic, and Airports, the Regional Administrator, and the Budget and Logistics Divisions. The ANI representative chairs the committee, schedules meetings, and publishes minutes.

2.Activities

Most of the F&E program is completed by informal coordination by the representatives. At meetings, the IDWC plans and approves the annual F&E regional budget submission and also approves regional reprogramming actions. The IDWC recommends to the Regional Facilities Review Committee (FRC) the regional and national F&E program items in priority order. The IDWC establishes sub-working groups, such as a Navigation Aids Committee, as necessary. It advises the FRC if additional regional resources are needed for the budget process. The IDWC assures adequate project documentation, airspace acceptability, and conformance with current airport planning, including record of airspace considerations, site inspection, and airport owner coordination, as appropriate. In the case of ILS/MLS components, the IDWC assures precision instrument runway (PIR) designation prior to inclusion

in the budget by developing the coordination procedures to allow timely PIR designation.

272. AVN PARTICIPATION IN WORKING GROUPS
FPO representation is required on F&E committees. The FPO F&E specialist normally serves as the AVN member of the IDWC. The specialist shall represent the FPO in all discussions and decisions made by this committee. The specialist is responsible for AVN input relative to TERPS criteria and must determine any necessary FPO actions required based upon committee decisions.

273. CHANGES TO AN F&E BUDGET
After an FY F&E budget leaves the region, submitted changes to this budget can be broken down to two types. Changes before the budget is acted on by Congress are known as resubmissions; changes to an approved budget are known as reprogramming. The respective Regional Associate Program Manager initiates all reprogramming and resubmissions.

Reprogramming for Special Projects due to an aircraft accident, accident investigation, or any unique operational requirements, a decision may be made at FAA Headquarters or in the region that a site specific facility/equipment component is needed immediately. This may simply require the region to install the system from material on hand and reprogram the budget. But if the component is not be available in the region, it may have to be borrowed from another region or intercepted during shipment from the manufacturer to another region. In either case, two or more regions are involved in the reprogramming. These are not unusual situations and components may be borrowed from other regions for various reasons other than in an “emergency”. The F&E specialist may become involved in these types of situations and must be aware that timely coordination within the region, with the other region, and with ARN-200 in Washington is critical to solving the immediate installation problem and assuring the appropriate reprogramming actions are properly completed.

274. F&E INQUIRIES
The FPO F&E specialist will often receive random inquiries from the public or other government entities regarding establishing terminal facilities and equipment for a particular airport. The FPO specialist should be prepared to discuss the benefit/ratio (B/CR) for the specific location, TERPS criteria, and other technical matters relating to AVN.

a. Airport Improvement Program (AIP)
This program provides partial federal funds to airports for capital improvements including funds for facilities and equipment. The regional Airports Division or Airports District Office will occasionally request the FPO to complete a B/CR for terminal navigation aids based on APS-1. The FPO may provide assistance to the Airports Division in determining APS-1 requirements and computing B/CRs, using the methodology described

in APS-1 and in Section 4 of this chapter. The FPO may be requested to provide technical guidance regarding TERPS criteria, flight safety considerations, and any special knowledge they have concerning the airport, when the regional Airports Division is considering AIP funded projects.

b. Takeover of Non-federal (Non-fed) Facilities
Non-fed terminal air navigation and approach facilities are privately owned facilities (state, local authority, or private) which were purchased without federal funds or partially funded under the Airport Improvement Program (AIP). If eligible under the APS-1 criteria, the FAA may then assume ownership, operation, maintenance, and logistic support of these facilities and equipment, provided FAA standards and requirements, as outlined in applicable agency directives, are met. The regional Airway Facilities (AF) Division has the responsibility to determine if a facility meets takeover requirements and whether it should be considered. AF may request the FPO to compute the B/CR using the methodology described in APS-1. The F & E specialist may provide AF the B/CR results and any requested technical guidance regarding application of TERPS criteria.

c. Discontinuance Inquiries
On rare occasions, Airways Facilities or others may ask the FPO to conduct discontinuance B/CR on a facility. The criteria for discontinuing a facility are approximately one-half that required to establish the facility. Specific discontinuance criteria for each navigation aid are contained in APS-1. With ever increasing air traffic, the need for such a review is rarely necessary. Conditions may exist though, when a facility becomes outmoded and should be discontinued. If requested, the F&E specialist will conduct the B/CR and provide any additional input that the facility discontinuance may have on flight procedures.

d. Congressional Inquiries
Occasionally, the F&E specialist may receive queries from congressional sources (congressional staff, DOT/FAA congressional liaison, etc.) indicating congressional interest in facilities for an airport in their district. (Unless regional guidance specifies a different point-of-contact, inquiries to the FPO directly from congressional staffs should be referred to the regional public affairs office.)

To answer these inquiries, a B/CR may have to be completed. The inquiry may request an update on the status of a facility installation. The FPO specialist must be aware of the status of all ongoing and proposed F&E projects for which AVN has budgeting responsibilities. When appropriate, coordinate with ARN-200 and other interested divisions, especially Airway Facilities. Congressional inquiries are sensitive in nature and as such, require an accurate and timely response. (Also see f. below.)

e. Other Inquiries
Facilities and Equipment inquiries can come from any source: state and local aviation officials, airport managers or operators, flying clubs, aviation companies, resident companies with aircraft, resident military organizations, professional organizations, or individual pilots. To properly discuss and answer these inquiries, the FPO F&E specialist must be knowledgeable about the entire F&E program, the status of FPO F&E projects, possible options for getting facilities funded and installed, TERPS, and aviation safety considerations. A concise and accurate answer must be provided for all inquiries. If the query is in regard to F&E submissions, which are pending congressional action, the information on their status should be deferred until Congress has acted.

f. Sensitivity of Submitted Facilities Lists
The F&E budget process is long and complicated. Obviously, the entire submitted candidate list for any facility type may not be included in the final budget presented to Congress by the President. Congress, in turn, is the final authority in determining the candidates to be funded. Because all regional candidates will not be funded, the FAA policy is that candidate lists are confidential.

(1) Of course, specific sites and the candidate lists must be discussed with FAA regional and headquarters personnel during the submission, coordination, and review processes. The required confidentiality does not apply within the FAA.

(2) Outside the FAA, extreme care must be exercised by FPO personnel answering inquiries concerning the specifics of a given candidate list. Although some of the individuals seeking F&E information may understand our budget process, most will not. The obvious misconception is that regionally submitted facility lists will be appropriated by Congress. The FAA does not want to imply that installation commitments are made based solely on meeting APS-1 criteria and being submitted by the regions. This is the reason for the confidentiality policy.

(3) Specific discussions that should be avoided are the candidate site names on a list, number of candidates on a list, priorities assigned to a candidate, and supposition as to which candidates may be approved by Congress.

(4) The specialist is not restricted from discussing a specific facility candidate with interested individuals. The specialist may state that the site was included in the “FAA’s FY 20XX Facilities & Equipment Budget Planning Process”. However, a follow-up statement may be required stressing that this is only the beginning of the “budget planning process”, the adjusted FAA budget will be submitted to Congress by the President, Congress has the final authority over that budget, and rarely are all the region’s candidates funded by Congress.

(5) No restrictions apply after Congress has acted on the FAA F&E budget. The funded locations for the approved facilities may be discussed with all interested parties.

g. Special Studies or Proposals
Whether initiated by the FAA or coming from outside the FAA, a capacity enhancement study, which requires a facility installation, is a specific type of inquiry requiring careful review. Often, these studies propose nonstandard use or siting of terminal NAVAIDs that may not meet the criteria established in APS-1, TERPS, or facility installation orders. The F&E specialist should thoroughly analyze and comment on the proposal based upon AVN F&E obligations, and the impact the proposal will have on existing and planned instrument approach procedures.

275. AVN PROJECTS AND BUDGETING CONFLICTS
AVN sponsored projects are as important as projects proposed by Airway Facilities and Air Traffic. Occasionally, project budgeting or budget reprogramming may result in conflicts between regional divisions.

a. Project Involvement
The FPO F&E specialist and the FPO must be assertive in the entire F&E process (from planning to installation) and, especially, in committee meetings where the major decisions are being made. Flight procedures requirements require an active participation by AVN personnel to assure appropriate distribution of the limited funding resources.

b. Conflicts
Where facility need is great and F&E funding limited, even some of the best working relationships can experience conflict. Common sense, tact, and compromise should always prevail. Conflicts should be resolved at the working level whenever possible. When not possible, branch or division level management resolutions may be required with the Regional Administrator as mediator.

276. - 299. RESERVED.